

# Common Technical Framework Conceptual Models of the Mission Space (CMMS)

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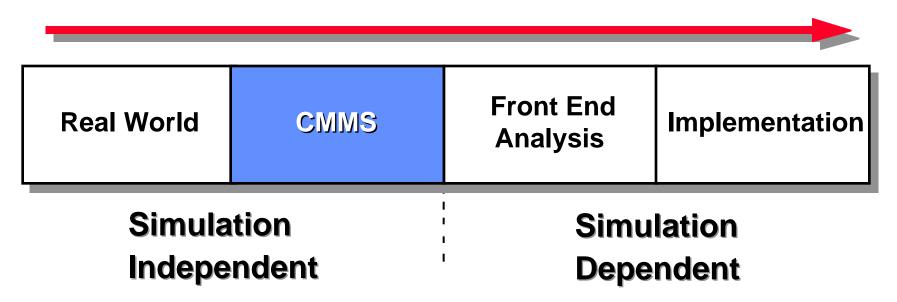
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## **CMMS**

## **Simulation Development Process**



Every simulation developer builds something like a CMMS. The problem has been that they aren't authoritative and we throw them away.





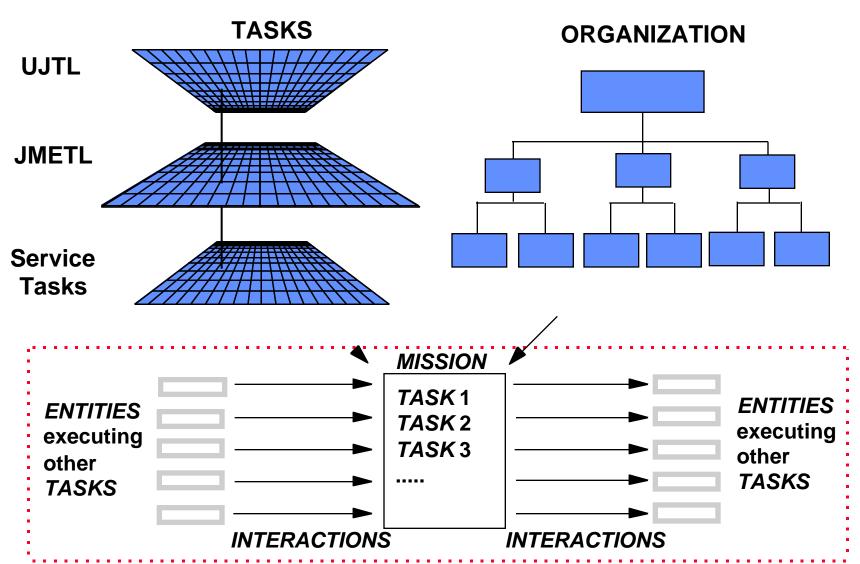
### What is a CMMS?

- A <u>hierarchical</u> description of the actions and interactions among the various entities associated with a particular mission area
- An authoritative first abstraction of the real world
- A <u>common framework</u> for knowledge acquisition
  - Validated, relevant actions and interactions organized by specific task and entity/organization
  - Standard format for expression
- The purpose of CMMS is to cost-effectively provide simulation developers (and others) a common understanding of the real world





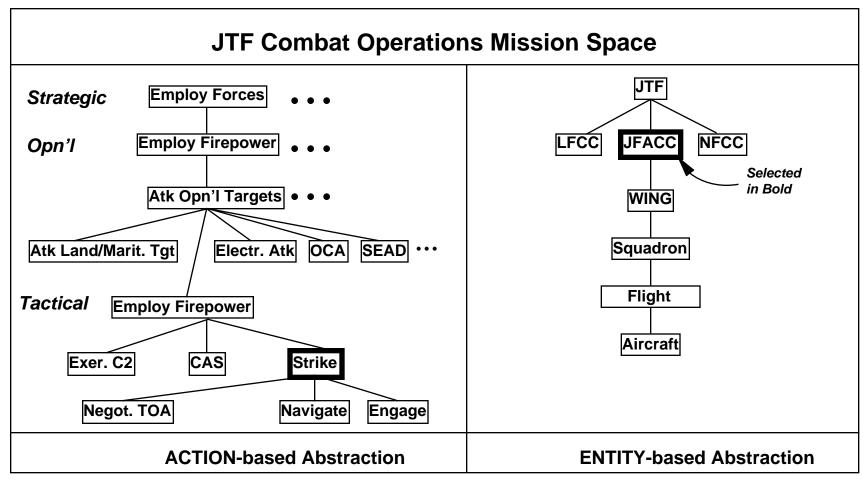
# **Organizational Concept**







# **ACTION** and **ENTITY** Selection Example

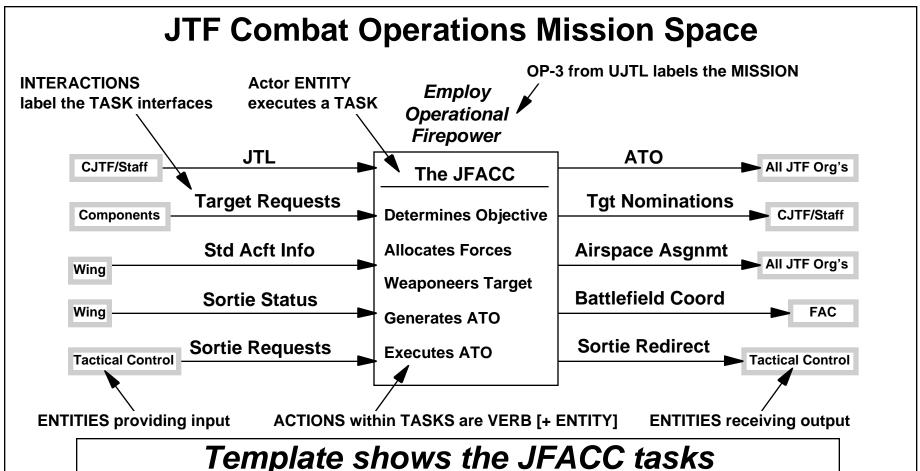


User Selects the ACTIONs Involved and allocates ENTITIES to execute these ACTIONS in the Strike Task by the JFACC ...





# **ENTITIES, ACTIONS, TASKS, and INTERACTIONS**

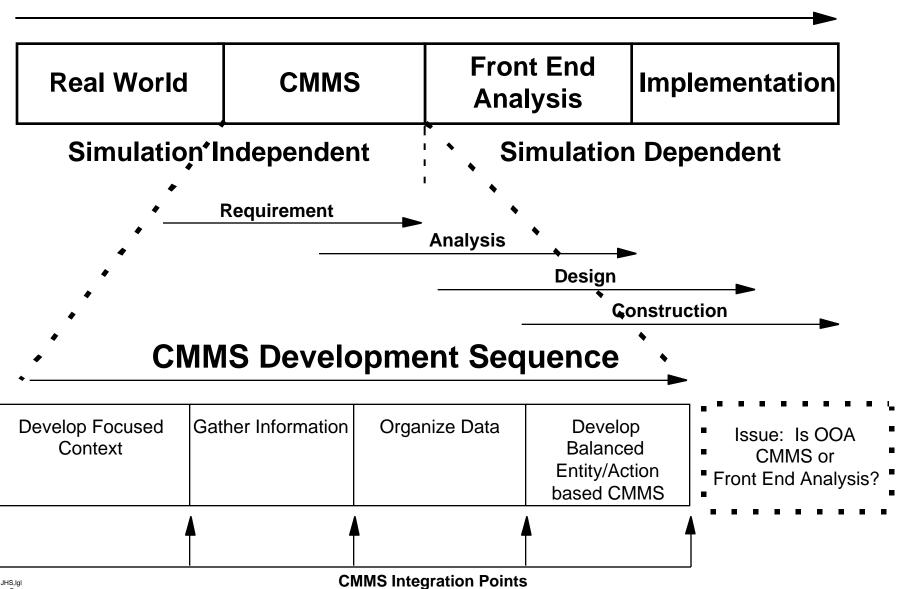


Template shows the JFACC tasks (e.g., JFACC generates ATO) along with inputs, outputs, and their interfaces





# Simulation Development Sequence







# **CMMS Process/Tech Framework**

# Information Sources

Feedback to authoritative sources

WRITTEN
Doctrine
UJTL
CINC JMETL
Service tasks
ORAL
Warfighter



**KA Analysts** 

DIF

**CAPTURED KNOWLEDGE** 

#### **USER INTERFACES**

- Multiple user-requested views
  - Organization structure
  - Task structure
  - Model of interactions
  - Visualization of combat process
- Performance demands
  - Response time
  - Refresh rate
- User-friendliness

#### **DATABASE**

- CMMS elements:
  - Entities
  - Actions
  - Interactions
- Pointers to:
- Knowledge acquisition history
- Auth. sources
- Applicable models and simulations

# MANAGEMENT PROCESS/TOOLS

- CMMS element integration
- Warfighter approval
- Functional area mission space mgt
- Resource/tool management

#### KNOWLEDGE CONVERSION PROCESS/TOOLS

- Check source, format, content
- Extract CMMS elements
- Deficiency correction
- Tool guidance
- Store in temporary database
- Convert CMMS elements for export







# CMMS Prototype 1 Cycle Lessons Learned

- No CSS, no integration
- DIF required for efficient conversion
- Export API's necessary to compliment import API's
- Is VV&A done prior to conversion and integration, after, or both?
- How are VV&C values aggregated?





# **CMMS Prototype Cycle 2**

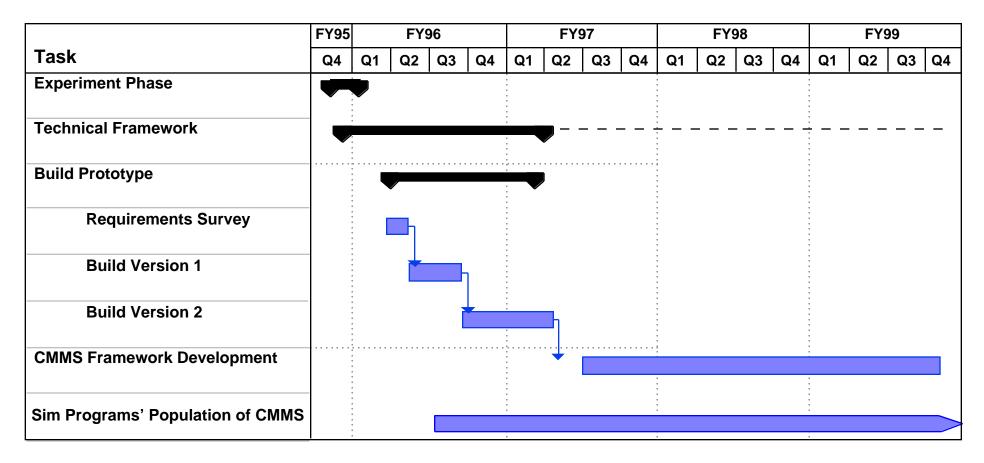
- Develop DIFs and improved conversion routines for existing programs
- Add functionality to capture additional elements in Technical Framework (e.g., conditions, sequencing)
- Add functionality to reflect new Technical Framework functions
- CMMS use-case by simulation developer





# **Long Range Schedule**

#### **CMMS Execution**







# Why Should I Care about the CMMS?

- Provides a direct link between the warfighter and the simulation developer for credible, trusted simulations
- Everybody doesn't have to do all Knowledge Acquisition by themselves--can reuse others' KA
- It forces use of authoritative data sources (Warfighter in control)
- Increases likelihood of interoperability with other simulations
- Useful for training and doctrine development, as well as simulation development
- Means to map M&S capabilities against real world
- Provides traceability for VV&A
- Means to alert developers of need for updates